RE HOLLINGER FIRE INQUIRY.

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DENNISON, U.S.A.

REPORT OF THE COMMISSION.
PART I.

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IN THE MATTER OF

A Fire that occurred in the Hollinger Consolidated Gold Mines, Limited,

AND IN THE MATTER OF

An inquiry under THE PUBLIC INQUIRIES ACT, R.S.O., Chapter 20.

PART I. CAUSE and RESPONSIBILITY.

F A C T S .

The Hollinger Consolidated Gold Mines, Limited, employs approximately twenty-five hundred men, and at the time of the outbreak of the fire in question nine hundred and twenty-one workmen were employed underground.

The fire started in stope 55-A east of crosscut 12 on the 550 foot level of the Hollinger Consolidated Gold Mines, Limited, at approximately fifteen minutes past nine o'clock on the morning of the 10th day of February, 1928.

The material in the stope was dry refuse from the thaw house, and fuse and cap houses situate on the 550 foot level, and consisted of paraffin wrapping paper, powder boxes, box lids, sawdust, fuse ends, and some detonators.

This refuse in the stope covered a surface of twelve feet wide by one hundred feet long with a depth of about forty-five feet, and appeared to have been placed on waste rock fill.

Smoke and poisonous gas generated by the fire was driven by its volume against the natural air currents in the drifts and travelled approximately in length one-quarter of a mile and in width one-eighth of a mile on the 550 foot level within fifteen minutes after smoke was seen or recognized. It also penetrated in similar density, and in about the same period of time, portions of the 425 and 625 foot levels.

At 10 A.M. on the morning of the fire, workmen were being actively withdrawn from the mine, and at 3:30 P.M., after a complete checking up of the men and their locations, it was ascertained that 49 men still remained underground.

At 10 A.M. of the morning of the 10th, the body of Ira Graham was recovered and brought to the surface from the 625 foot level, and at 10:45 A.M. the body of W. M. Stevens was recovered in crosscut M-4 on the 425 foot level.

Twelve of the 49 men then unaccounted for were located and brought to the surface in fair physical condition at various times not later than 3:15 P.M. on the 11th.

The first of the imprisoned men to reach the surface was G. Zolob, a sealer, who, at 1:00 P.M. of the 11th,

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made his way from the 675 foot level to the open, unaided, and beset by difficulties and dangers. The resourcefulness of and encouragement given by F. Jackson, a scaler, (a Lancashire miner and one of Zolob's entrapped companions), made it possible for Zolob to maintain sufficient strength to attempt the effort to gain the surface.

By achieving his objective, Zolob probably saved the lives of his four companions and gave information that was of the utmost value to the rescue parties. Zolob and Jackson need no commendation from me. They have written their names on the scroll of brave and resourceful men.

Between 10:00 P.M. of the 11th and 7:30 P.M. of the 13th, and at various times on the intervening days, the bodies of 37 men were taken from the mine by the several rescue parties.

The fire caused 39 fatalities, death resulting from carbon monoxide poisoning.

The origin of the fire has not been determined.

The levels affected, the men working thereon, and the fatalities are as follows:-

Level	Men at Work	Fatalities
425	51	5
550	73	15
675	53	14
800	52	5

F I N D I N G S .

Dry thaw house refuse in its parts and in substance was of an inflammable nature and as such an apparent fire hazard. Its proper disposition, therefore, was of the utmost importance as a measure of protection against the occurrence of fire.

There was an omission on the part of the General Manager in not inquiring or knowing how and where such inflammable matter was being placed.

The Assistant General Manager was remiss in not personally satisfying himself that thaw house refuse was being disposed of through the central waste pass, or by other proper method diluted or mixed with waste rock and other material as he had been informed was the practice of the Company with respect thereto.

Methods of disposal of thaw house refuse were -

1. Sent to the surface and burned under mine boilers. This practice was stopped on account of minor explosions occurring presumably from detonators, or dynamite, which had become mixed with the refuse.

2. By decision of the General Superintendent and the Mine Superintendent, made in 1923 or thereabout, two options for disposal of thaw house refuse were given:

(a) Through the current waste pass.

Being sent through current waste pass, it would

intermingle with the waste flow, be drawn off at the lowest level, used as backfill, or taken to the surface, redumped, and again sent down the mine to be used where needed. This process was a reasonably safe method of disposal.

(b) Direct to stopes which were being backfilled.

This method, without complete dilution or mixing of the refuse with waste, imported danger. A duty was therefore imposed upon the General Superintendent and Mine Superintendent to keep themselves informed if this prescribed manner of disposal was being properly and safely carried out. In this duty they failed.

3. Dumping of thaw house refuse in empty stopes where backfilling was not being done.

This dangerous and hazardous plan seems to have been adopted without orders from the General Superintendent or the Mine Superintendent. From a system of permissible dilution as referred to in Clause 2, the practice became one of complete segregation of inflammable rubbish.

Officials who issued orders pertaining to methods and practices to be observed and carried out in the disposal of thaw house refuse underground failed to keep themselves informed if such methods and practices were being maintained.

Verbal orders were given where written orders were advisable in order to fix responsibility and as a precautionary measure.

The failure to issue written orders respecting the method of disposal of thaw house refuse as determined by the General Superintendent and Mine Superintendent, and the absence of any complete record prior to April, 1927, of stopes in process of being backfilled were contributing causes of the fire.

The lack of co-ordination in the organization of the Company resulted in a disjointed system of control, thereby permitting the improper dumping of thaw house refuse in empty stopes where there was no concurrent act of backfilling or covering.

The General Manager and the Assistant General Manager cannot dissociate themselves from responsibility for their own Organization; and, in my opinion, the responsibility of a General Manager and Assistant General Manager is not limited in extent or time, where it concerns the safety or protection of the workmen or others under them.

It is a fact that thaw house refuse was being placed in Stope 55-A for a period of two or two and a half years prior to the time of the fire, and it is an admitted fact that Stope 55-A had not been backfilled since April, 1927. It is further in evidence, and I find as a fact, that this condition prevailed during the year 1926 or earlier.

Those workmen who placed it, and those who saw or knew of it being so placed, were intelligent, practical miners, capable of appreciating the danger of the act and owed

a duty to their fellow workmen to report the fact to the Safety Inspector, their superior Officer, or the Government Mine Inspector.

The General Superintendent, the Mine Superintendent, the Production Superintendent, and Transportation Foremen under him, the mine foreman later the Superintendent of Transportation, Transportation Bosses and Company Safety Inspectors knew, or should have known, that thaw house refuse was not being thoroughly mixed with or completely covered by waste rock, sand or gravel, and therefore in this condition constituted a menace.

These officials in their respective responsible positions formed links in the chain that bound the executive and management with the workmen and should have cemented the whole as a compact Organization. Failure to properly instruct, to enquire, to know, prevented cohesion and let in a practice which in an insidious manner, silently grew into a recognized system, or accepted policy, thereby creating a condition which made possible the fire in question.

The danger was not recognized by those who ordered or permitted it, or by those who actually disposed of such refuse. From the General Manager down the scale of the Organization to the muckers, no one thought of a fire occurring underground. All minds were oblivious to the fact that thaw house refuse, being highly inflammable, was therefore a dangerous substance when so left underground.

This security of mind is, I think, mainly account-

ed for by a number of accumulated circumstances.

On the part of the Management and Organization of the Company:

(a) Concentration on production.

(b) Immunity from metal mine fires in Ontario.

(c) A wet quartz mine.

(d) The absence of timbering in quantity.

(e) The amount of material involved in the disposal of thaw house refuse being insignificant in comparison with other major operations of the mine, it became obscured and was overlooked.

By the men who placed the waste or saw it being placed without complaint:

(a) The habitual and long use of oil-skins as protection against wet and dampness in a cool, damp mine induced a placid state of mind undisturbed by thoughts of fire.

(b) A reliance upon the judgment of experienced officials over them who ordered or permitted the practice.

(c) The stope itself with its dripping walls not being combustible presented the security of an incinerator.

(d) That a fire could start within such a receptacle was a remote possibility and, if it did occur, would be harmless.

(e) Familiarity with powder fumes.

These suppositions are in extenuation of the omission to realize the menace that such combustible material

presented. It was not a neglect of a condition that was realised, but an omission to realize a condition.

Section 171 of the Mining Act defines the powers and duties of a Government Mine Inspector as follows:

Sub-section (1) "It shall be the duty of every Inspector, and he shall have power,-

> (c) to examine into and make inquiry respecting the state and condition of any mine ... and all matters and things connected with or relating to the safety of the persons employed in or about the mine ... and to give notice to the owner or agent in writing of any particulars in which he considers such mine or any portion thereof, or any matter, thing or practice to be dangerous or defective ... and to require the same to be remedied within the time named in such notice."

His duty is, therefore, two-fold,

To examine into and to make inquiry.

The Inspector of Mines of the Porcupine Mining Division did make inquiry as to how thaw house refuse was being disposed of and upon being assured by the then Hollinger Safety Inspector that such refuse was being sent through the central waste pass, his mind was satisfied and the inquiry ended. The answer from the standpoint of safety was a satisfactory one and reassuring to the Inspector. The Inspector however, did not examine into the "state and condition of the mine" respecting the disposal of a dangerous material such as thaw house refuse. An examination of the mine with reference to this material would have shewn that the Safety Inspector's statement was partially but not wholly true, as the fact was that thaw house refuse was being sent only at times through the central waste pass and more frequently to

stopes where backfilling was in process or had been definitely suspended.

The Inspector made it a practice on his visits to this mine to inspect the thaw house and his mind was necessarily affected by the knowledge that there would be inflammable debris to be disposed of after the powder was removed from the boxes. It was not, therefore, forgetfulness, but passivity, on his part. An assurance had been given and accepted. It ended there.

The Inspector was misinformed by the Safety Inspector, a responsible official of the mine from whom he had a right to assume a candid and accurate answer would be given to his inquiry. It was not a wilful misstatement of a fact, but a reply given in ignorance of a fact that it was his, the Safety Inspector's, duty to know.

An Inspector, to justify his appellation and purpose, should be satisfied only with what he actually knows to be a fact, not what he is told or hears. He should be thorough, possessed of an inquiring mind, and eternally vigilant. With these attributes, he will at once impress upon (as the fact should be), a mine organization and employees that the spirit of the regulations of the Mining Act must be strictly and closely observed.

The Department of Mines is impotent in its effectiveness if it cannot rely upon its officials in their several responsible positions. The Department had a right

to assume that its Inspector would inspect in the full sense of the term, and as interpreted by the language and essence of the Regulations of the Mining Act.

The Mining Act imposes upon the Inspector the duty of examining into and inquiring respecting "the state and condition of any mine" and "all matters and things connected with, or relating to the safety of the persons employed".

The safety of the persons employed may not be protected without an examination into the state and condition of the mine. The two requirements of the Section, if exercised, should give the assurance aimed at. The proper disposal of thaw house refuse is closely allied with safety. An inquiry, therefore, without examination, was not a compliance with the Act. The Inspector was remiss in accepting a statement concerning a possibly dangerous condition as a fact without a continued personal confirmation of it.

The statutory duty of the Inspector and the responsibility of the operators and management are separate and distinct obligations. Each has a stern duty imposed by law. The neglect of one does not relieve the responsibility of the other. The duties of a Government Mine Inspector are circumscribed; those of an operator or management unconfined in connection with or relating to the safety of the persons employed in a mine.

The fact appears to be that, in no part of the

North American Continent, where metal mines are in operation, is there a specific requirement by law or regulation that empty boxes, paper and combustible refuse must be brought to the surface, and the further fact is that such refuse, as a general practice, is placed underground when it is accompanied by a filling of waste rock or other similar material.

The management of the Company, its officials and workmen used expedition in locating and removing the men from underground. From the moment smoke was detected and reported, officials and workmen, unmindful of danger, gave freely of their services in the common task of rescue.

After consultation and thorough consideration, Mr. McMillan, the Government Mine Inspector, from the Cobalt District at 1:00 A.M., Saturday, the 11th, ordered the fan to exhaust. The evidence indicates his decision to have been practical and salutary.

The appliances gratuitously supplied and brought to the mine by the Consumers' Gas Company, Limited, of Toronto, aided the respective acts of resuscitation and rescue.

The complete rescue equipment and apparatus kindly sent by Mr. Scott Turner, Director of the United States Bureau of Mines, in charge of experts in the science of fighting and controlling underground fires, were effectively used in subduing the fire, restoring the normal air currents and thereby permitting with safety

the examination of the mine and the recovery of the bodies of those who had lost their lives.

No boundary line was recognized in the act of co-operation between neighbors interested in the same industry. In sharing a burden, the tie of comradeship became more closely knit.

The evidence supports the supposition that, with the density of smoke that prevailed in the parts of the mine affected, no known or adopted rescue apparatus or equipment would have saved a life that was lost.

As a measure of protection, it is not so much the nature of the equipment required to meet and contend with an emergency as the exercise of constant vigilance and anticipation of and concentration on essentials by all interested or employed in the development of a mine. An underground fire need not occur in a metal mine except from means beyond the control of man.

C O N C L U S I O N .

The Commission which issued under "The Public Inquiries Act" required me to inquire into, investigate and report upon the causes of the fire which occurred in the Hollinger Mine between the 10th and the 15th days of February, 1928, and to fix responsibility therefor and

to make such suggestions and recommendations in connection with or arising out of the said fire as in my judgment the circumstances warranted and to report the evidence and facts brought out, together with my findings, and generally to exercise all such authority as might be essential for a full and complete inquiry.

Pursuant thereto, notice was publicly given that the Commission would hold its first sittings at the Town of Timmins on Monday, the 27th day of February, 1928, to inquire into and investigate the causes of the said fire and to fix responsibility therefor.

Mr. Peter White, K.C., acted as Counsel for the Commission, and with him was associated Dr. George Nasmith in a consulting capacity; W. A. Gordon, (associated with Mr. T. B. Roberts in his capacity as practical miner), represented the miners; Mr. Gordon Gauthier, Finlander labourers affected: and Mr. A. G. Slaght, K.C., represented the Hollinger Consolidated Gold Mines at the sittings.

The inquiry at Timmins occupied eleven consecutive week days, and during that time 57 witnesses were heard and an inspection made of the stopes and other workings which were the subject of the evidence and relative to the issues being heard.

That an underground fire had not occurred in the mines of the Province of Ontario was the justified boast of its mining industry. Suddenly, quietly, un-

observed, a flame burst out. A fire had been kindled; it blazed; then smouldered; then ceased. In the brief time of its cruelty, thirty-nine human lives had been terminated by the outpouring of its smoke and gas. Consternation followed complacency; chagrin replaced pride. The feelings of 2500 workmen and officials of the Hollinger Mine had been rudely and ruthlessly shocked.

The evidence was that of workmen and officials of the Hollinger Mine, then or heretofore in its employ. Quietly and with dignity, they told what they knew. There was hesitation through diffidence, but restraint through fear was not manifest or admitted. As witness followed witness until the research was exhausted, the paramount note of their evidence was, "We did not think of fire"; "It never entered our minds". Men with University degrees, skilled in their profession, practised in its application; workmen, experienced and tried in underground mining, gave no thought or heed to the possibility of fire arising from the manner and method of the practised disposal of thaw house refuse; in the subsequent light of what occurred, a seemingly extraordinary admission, but, viewed in the atmosphere of their environment, a state of mind that can be understood.

That the scales of justice should be evenly balanced, it was necessary that I should weigh the evidence unaffected by the glare of the fire. I have, therefore,

dissociated my mind from the demonstrated fact that thaw house refuse was highly inflammable and required the utmost care in its disposal. I have heard a mass of evidence on the nature of thaw house refuse, its disposal, and the inconsequential attitude of mind of all concerned in respect thereto. Was it a menace that should have been realized? Were the conditions at the Hollinger Mine such that what in itself was dangerous had been reduced to a degree of safety by its assumed or known practice of disposal? What should trained and experienced miners have anticipated? If the danger was rea lized, had it been carelessly overlooked in the effort to get increased production, or otherwise? All these pertinent and moot questions and other relevant facts I analyzed and carefully considered and have found the facts accordingly.

Those of the public unfamiliar with the industry of mining with its many pressing geological, metallurgical and economical problems, and without a conception of the vastness or physical interior of this, the largest gold mine on the Continent, must necessarily fail in forming a sound opinion of the degree of responsibility for the cause of the fire.

Those who guided the activities of the mine, and those who gave their services, one and all testified to a belief in a state of physical security. This outstanding fact must be based upon some common reason and

cannot lightly be dismissed in measuring the degree of neglect or responsibility for what occurred. I have given reasons why this state of mind prevailed, and if the suppositions which I advance are tenable, the omission can be said to be a neglect of a condition that became obscured; lost track of in the concentrated effort for increased production which the Directors, as a body of businessmen, properly sought if the mine lent itself to it, and which the shareholders would have a right to expect.

The evidence does not indicate, nor do I find, that a recognized danger was carelessly cast aside in order to achieve major production. It was thought the material was being safely placed. If so, the omission was to know that it had been so placed.

There was a dependence by the management upon officials under them, and these officials upon the workmen, but no one saw to it that the chain of continuity of action was complete.

I am deeply impressed with the magnitude of the responsibility the management has in the conduct of this mine. It employs approximately 2500 men, of whom 1540 work underground; 89 bosses direct the workmen under them; there are 100 miles of drifting and crosscutting; 8 miles of raises and ~~four~~ shafts. The water pumped from the mine amounts to 835,000 gallons a day; there were 370,000 tons of waste rock put back in stopes last year,

and 306,000 tons of sand and gravel were placed in worked out stopes between May and November of 1927. There are

(a) 156 working stopes

(b) 113 stopes ready to be filled

(c) 35 empty stopes not filled

(d) 29 stopes in process of being filled

(e) 153 stopes partially filled

(f) 42 stopes filled and ready to recover sills or in process of recovering.

A mighty undertaking, and a tribute to the management that brought it out of its swaddling clothes in 1912 to an amalgamation of properties with its present production of over 6,000 tons per day.

The mining industry of Ontario has no occasion to bow its head. It stands at the forefront of management and achievement; and my association with the industry, embracing as it does the prospector who leads the way to discoveries, the bona fide promotor who starts the prospect on its way to development, the management which wins the ore from the rock aided by workmen loyal and contented, is my most treasured asset.

The quiet, unobtrusive and unbiased manner in which the testimony was given by all, the composure of those, interested as bereaved or in the safety of their fellow workmen, sitting with outwardly tranquil minds

through the trying ordeal of eleven days of testimony immediately following the tragedy, was impressive and dignified, and bespoke the spirit of those who dwell in the North.

Environment moulds character. Tragic circumstances evolves heroes. I vividly remember Fred Jackson, quietly and unostentatiously telling his story of conflict with Nature's forces. Without exaggeration or boastfulness, he recited how he and his four companions retreated from one vantage point to another, slowly and stubbornly backing away from the fumes of the deadly gas; how he turned on the air and directed it against a plank to cause the current to rebound; connected lengths of hose in an attempt to blow the smoke away; and how he cut his smock in four pieces and unselfishly gave his companions a piece to place over their mouths.

And then Zolob's determination to break through the impenetrable barrier of smoke and win his way to the surface. What took place between Jackson and Zolob at that critical moment is best told as Jackson gave it. Jackson said:

> " My light was only a light about half an inch. Zolob put it into his lamp and fixed his lamp and got a light, put his packet on his back, took a piece of blasting stick about four feet long, and he said, 'I go try'. I says, 'God bless you'. He says, 'I try go out. Maybe I die, maybe not." I says, 'Don't go, George.' He says, 'Oh, yes, I go'; so he got up and set off down the crosscut."

"Maybe I die, maybe not". Failure meant death; success, life to himself and his companions. The

die was cast. The courage was there, and Zolob fought his way to the light of day - Jackson's resourcefulness, reflecting the motto of the St. John's Ambulance Corps, of which he was a member, "Pro Fide, pro Utilitate Hominum", and Zolob's strength and determination accomplished the seemingly impossible.

And then Villiancourt, the cagetender. The smoke was seen, the signal given. Up went the cage to investigate, and then to report at the surface. Down again to give warning. And so, up and down with his message of warning until he lost control. Fred Poulin, the shift boss, hunting his men, courting death; a duty to be done; George Pond, the foreman, who thought of his men and not of himself: and so many more wonderfully courageous men it was my privilege to hear as witnesses. The Mine Manager, Officials and workmen all ready and anxious to make the descent; not a refusal, not a hesitant amongst them; a tribute to the manhood of the North, made sturdy, strong and true by their contact with Nature's forces and their fellowman.

The Fire Department of the City of Toronto sent its best. The Consumers' Gas Company of the same City answered the call; and the Bureau of Mines of the United States of America, without a moment's delay, hastened on its way their mine rescue car, fully equipped and manned by distinguished officials. The railroads opened their line, and 1000 miles was covered in a period

eleven hours less than would be taken by the fastest express train.

So full is this tragedy of duty well done that it deserves the pen of one worthy of the material. It is not for me to dilate at further length.

The dependents of those who lost their lives may have the assured consolation that all that human ingenuity or resourcefulness could do was done, that no human agency could have saved a life that was lost and that those whose hour had come passed on their way to other and higher activities without a struggle, quietly, calmly and unconsciously stepping across the Great Divide.

As Commissioner, I am deeply indebted to the workmen of the Hollinger Mine, to the dependents of those who lost their lives and to the citizens of Timmins, for the confidence they reposed in the Commission and all associated with it, and for their deportment during the hearing.

"Behold how great a matter a little fire kindleth": James, 3: 5. Out of a chaos of facts, a simple lesson emerges: It need not have been: a sad refrain, but how true and beyond cavil or contradiction.

Let the curtain drop on what has been and rise on what is to be, thereby allowing confidence and morale to restore itself, is my parting word.

COMMISSIONER.

Toronto, May 17th, 1928.

RE HOLLINGER FIRE INQUIRY.

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DENNISON, U.S.A.

REPORT OF THE COMMISSION.
(PART II.)

IN THE MATTER OF

The fire that occurred in the HOLLINGER CONSOLIDATED GOLD MINES, LIMITED; and

IN THE MATTER OF

An inquiry under The Public Inquiries Act, R.S.O., Chap. 20.:

PART II. RECOMMENDATIONS:

The primary object of this Commission was to determine how and why the fire that occasioned this inquiry occurred. I submitted my conclusions thereon in Part I. of this report.

Minds had become quickened by the shock of the unexpected. The time was propitious and the stage was set to further inquire into the methods employed by operating and producing mines generally to combat possible or probable fires, their facilities for rescue and resuscitation, and otherwise the means employed for the protection of their underground workmen.

The full purpose of this Commission would not be fulfilled without such inquiry, and report upon its deliberations, with such recommendations as the facts necessitate.

I caused a summons to issue directed to the Manager of all the producing mines in Ontario and also invited Professor H.E.T. Haultain, of Toronto University, and Professor Graham, of Queen's University, to be present at a sittings of the resumed Commission to be held at the Court House in the Town of Haileybury on the 12th, 13th and 14th days of April. The following were present throughout the hearing:-

J. C. Nicholls, representing the International Nickel Company of Canada;

Oliver Hall, representing the Mond Nickel Company, Limited;

H.F. Fairlie, representing the Mining Corporation of Canada, Limited;

J. G. Mickenson, representing The O'Brien Mine;

Hugh Park and E.V.Heelands, representing the Nipissing Mining Company;

F. D. Reid, representing The Coniagas Mines, Limited;

W. Sixt, representing the Kirkland Lake Gold Mining Company, Limited;

D.L.H. Forbes, representing The Teck Hughes Gold Mines, Limited;

E. B. Knapp, representing Lake Shore Mines, Limited;

J.E.Grant, representing Wright Hargreaves Mines, Limited;

C. E. Rodgers, representing Sylvanite Gold Mines, Limited;

A. D. Campbell, representing Castle Trethewey Mines, Limited;

R. J. Ennis, representing McIntyre Porcupine Gold Mines, Limited;

R.E.Dye, representing the Vipond Consolidated Mines, Limited;

A.F.Brigham and A.Young, representing the Hollinger Consolidated Mines, Limited;

H.P.DePencier, representing the Dome Mines, Limited;

G. C. Bateman, representing the Ontario Mining Association;

H.A.Kee, Mining Engineer and operator; and

Professor H.E.T.Haultain.

The market value of the Companies represented approximated a billion dollars.

The Labour representative, Mr. T. B. Roberts, was also in attendance, and the respective interests were represented by the same Counsel who held briefs at the initial inquiry.

On the opening of the sittings, I briefly informed those present the reason of the continued inquiry and solicited their considered opinions upon the various suggestions which were to be put before them.

Having a proper regard of my limitations concerning the technical matters to be discussed, I requested Mr. Balmer Neilly, a Mining Engineer who was present, to assist Counsel for the Commission and be ready to advise me if the occasion arose. He graciously and gratuitously complied.

Mr. G. C. Bateman, Secretary of the Ontario Mining Association, was also in attendance, and, on my suggestion, acted as a Convenor of the operators and assisted the Commission by suggesting, as a witness, one or more of those present who could speak authoritatively upon a particular subject to be introduced and thereby expedite and facilitate the inquiry.

Mr. T. F. Sutherland, Chief Inspector of Mines, was the first witness heard. He presented, in written form, a number of considered suggestions, some of which he asked should be made additional regulations governing the operation of mines. The balance were introduced for the purpose of discussion and their adoption if approved.

Mr. Roberts, representing the miners,also introduced some proposed additions to the regulations and, by himself and through his Counsel, Mr. Gordon, advanced their merits.

These new and specific matters were put before the Commission and witnesses were heard at length on each subject.

After Mr. Sutherland had been heard, and in order to allow those representing the industry to digest his and the Commission's suggestions, an adjournment was taken until the following morning. Mr. Bateman, in the interval, assembled the operators and each

matter was fully considered and its purport and application weighed, so that, on the resumption, the Commission had the benefit of thoughtful dissertations from experienced men and those having a knowledge of the particular suggestions he was, or they were, referring to.

Before the inquiry concluded, I named a Committee from those present, composed of:-

O. Hall and J. C. Nicholls),	Sudbury;
V.L.H. Forbes and J. Grant),	Kirkland Lake;
R.G.Ennis and H.P.DePencier),	Porcupine;
J.H.Dickenson and Walter Segsworth),	Cobalt;

and requested that they meet at the earliest moment to review the evidence put in and further consider the suggestions put forward. The Committee convened at Toronto on the 7th day of May, at which meeting Mr. Sutherland was present, with Professor W. G. McBride, of McGill University, who, as a mine operator in the South Western States of America, had considerable experience in mine fires, fire fighting and mine rescue work. The submission of this Committee has been handed to me.

The problem then became mine to unify and settle where there was diversity of thought and opinion. My task has been made easy in consequence

of the splendid co-operation of operator, miner, and the Department of Mines. It exemplified, on the part of the operator, a desire by rule, regulation or implication, to provide for the security and safety of workmen, and the preservation of the good name of the industry, which has indelibly written itself into the history of mining in Ontario.

Labour was tolerant in its views and refrained from embarrassing the industry by requesting vexatious regulations. The mining industry of this Province employs and is served by efficient, practical and law-abiding miners and workmen. This commendation is in accord with the opinion expressed by a responsible official of the United States Bureau of Mines when present at Timmins at the time of the fire.

Turn the mind back upon the past of the industry, and what does the picture of its active achievements portray? The nickel-copper mines of Sudbury have operated for forty years and the gold and silver mines of this Province for twenty-five years, without the occurrence of an underground fire. It was with warranted pride that Mr. Bateman, in his remarks to the Commission, referred to these facts. The record is illuminating and gratifying. It confirms the opinion I have held, based on experience, that operating mining engineers, as a class, are resourceful, tempering vision with stability, and always reliant.

These were the men who gave their opinions upon the subjects under discussion.

The statistics of accidents in the mines of Ontario indicate that, with an expanding industry, the average accident rate has decreased. It is to be observed that this average was made under the present mining regulations and indicates that the operator appreciates his responsibility.

In framing further regulations, it is expedient to maintain and continue the distinct relationship of operator and inspector and in doing so avoid multiplication of rules that might embarrass the operator and retard operations without a practical purpose being served.

The burden of responsibility is on the operator and he has always accepted the obligation. The operator uses initiative, is guided by experience and knowledge, and acts in consonance with rules and regulations made by the Department of Mines.

The Inspector's duty, as I understand it, is to see that the mining regulations are observed and to formulate further requirements as in his opinion the exigency suggests.

The Mining Act of Ontario in its regulations having reference to the operations of mines shows vision, has breadth in its application, and is reasonable

in its restrictions. It is the substance of the joint thought and experience of the Department of Mines and those representing the industry.

Mines in Ontario are to be developed to considerable depth and such expansion begets new conditions. The past is an experience the receptive mind profits from. To provide for the future is the purpose of the suggestions herein submitted.

No matter how the industry is regulated, or regardless of the utmost vigilance of the operator and Inspector, unforeseen accidents may happen in the hazardous occupation of mining.

The submissions I herein make have, in the main, the joint approval of operator, labour and the Chief Inspector of Mines, given after full discussion and mature thought.

Those suggestions put forward and not now adopted are held in abeyance for further study as their efficiency and expediency cannot at present be estimated.

I recommend that the Mining Act of Ontario governing the operation of mines be amended by vary-

ing or adding thereto in substance the following submissions:-

1. That every man employed as an underground foreman (meaning thereby one who is exclusively engaged in supervising the work of other men) shall be able to give and receive orders in the English language.

2. That an Inspector of Mines shall have the right to suspend any foreman or mine captain who is not familiar with or does not understand the requirements of the regulations governing the operation of mines as contained in the Mining Act of Ontario.

3. That the words "above ground" in the first line of Section 161, Subsection 11, of the Mining Act be deleted and the Section read as follows:

" No building for thawing explosives shall be maintained in connection with any mine except with the written permission of the Inspector of Mines. The site of this building and the style of structure and equipment shall be subject to the approval of the Inspector. The building shall be under the direction of the manager or some person

authorized by him. The quantity of explosives brought into any thawing house at any one time shall not exceed the requirements of the mine for a period of twenty-four hours, plus the amount that it may be necessary to have thawing to maintain that supply."

4. That all underground structures necessary for the installation, maintenance and repair of machinery and equipment should be fire-proofed.

5. That all fans except "Booster" fans should be placed on the surface and be reversible, and all underground fans should be in fire-proofed housing.

6. That oil and grease kept underground be contd ned in suitable metal receptacles and should not exceed one week's supply.

7. That there should be a sufficient number of fire doors at every station where practicable, so that the shaft could be completely cut off from the rest of the mine.

8. That all inflammable waste or rubbish should be taken to the surface.

9. That shift bosses and mine captains should certify at least once a week that there is no accumulation of combustible waste or rubbish

underground, except as noted, in the area under their supervision.

10. That rescue stations be located at a place selected by the Chief Inspector of Mines in the Timmins, Kirkland Lake and Sudbury mining areas, and be in charge of one man to be appointed by and under the control and direction of the Department of Mines. It should be the duty of such employee to take care of the apparatus, train men in the mines in his area in rescue work and inspect and report upon the apparatus, if any, maintained at any such mine.

11. That each rescue station should contain the following or other equipment to be ultimately determined:-

1 Tool Chest.
15 Oxygen cylinders - 100 cubic feet each.
1 Portable Orsat apparatus for making analysis of mine air.
1 Anemometer for measuring ventilation.
1 Psychrometer for determining humidity of mine air.
1 Maximum and Minimum thermometer.
2 Cabinets (First Aid) with extra bandages and splints.
4 Canaries for testing mine air for carbon monoxide.
2 Stretchers.
12 Self-contained oxygen breathing apparatus with accessories for testing, repairing and re-charging.
1 Pyrotannic acid detector for determining carbon monoxide in blood and air.
5 All-service Gas Masks with extra canisters.
1 Iodine pentoxide detector for indicating amount of carbon monoxide in the air of the mine.
1 Geophone.
1 Oxygen inhaler for administering oxygen in conjunction with artificial respiration.

1 Oxygen pump for re-charging small tanks for breathing apparatus.
1 Lifeline, 1200 feet, used by rescue crews when exploring mines after fires or explosions.
12 Electric cap lamps with accessories and charging equipment.
12 Approved type flashlights.
20 Bottles for collecting samples of mine air. Cardoxide.

The above equipment was suggested and put before the Commission by the Chief Inspector of Mines at the inquiry held at Haileybury. He was not then able, however, to definitely say it should be adopted in its entirety. It should be at once reviewed by the Inspector and the Committee representing the operators and finally determined. The equipment adopted should be used in all stations so that there would be uniformity.

12. That fire protection systems be installed at all underground crushers, tipples and in dry shafts.

13. That for the purpose of a uniform danger alarm, all mines in Ontario should have equipment for pumping into air lines a stench chemical to be selected and adopted by the Chief Inspector of Mines.

14. That readable signs showing the way to

emergency exits should be posted in prominent places underground and all men should be instructed where these emergency exits are placed.

15. That the Chief Inspector of Mines may order an underground connection be made between adjoining mines where he deems it necessary for the safety and protection of underground employees.

This proposed regulation invades the right of ownership, may involve an expense largely for the benefit of an adjoining property and otherwise open up contentious questions. While I deem it expedient to recommend it as a safeguard in a remote but possible contingency, there should be a proviso allowing the right of appeal from the order of the Inspector to a person or tribunal to be decided upon.

All of which is respectfully submitted.

COMMISSIONER.

Toronto, September 28th, 1928.